

What is claimed is:

1. A method for optimizing a computer program, said method comprising the steps of:  
generating a plurality of intermediate software optimizations based on the computer

program;

5 evaluating each of said plurality of intermediate software optimizations based on at

least one optimization objective;

selecting a final software optimization from said plurality of intermediate software

optimizations based on results of said evaluating step; and

transforming said final software optimization into an optimized computer program.

10 2. The method of claim 1, wherein said plurality of intermediate software

optimizations are software optimization graphs.

15 3. The method of claim 2, wherein said generating step comprises the steps of:

substituting instructions of the computer program with binary code;

parsing said binary code into a software representation graph; and

generating said plurality of software optimization graphs based on said software  
representation graph.

20 4. The method of claim 3, wherein said generating step comprises the steps of:

selecting an existing software optimization graph from said plurality of software  
optimization graphs;

identifying coding substitutions to apply to said existing software optimization graph;  
selecting one of said identified coding substitutions; and  
applying said selected one of said identified coding substitutions to a copy of said  
selected existing software optimization graph to create a new software optimization graph.

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5. The method of claim 1, wherein said generating step comprises the steps of:  
selecting an existing intermediate software optimization from said plurality of  
intermediate software optimizations;  
identifying coding substitutions to apply to said existing intermediate software  
optimization;  
selecting one of said identified coding substitutions; and  
applying said selected one of said identified coding substitutions to a copy of said  
selected existing intermediate software optimization to create a new intermediate software  
optimization.

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6. The method of claim 5, wherein said selecting steps each comprise the step of  
applying a searching algorithm.

7. The method of claim 1, wherein said evaluating step comprises the step of:

20 receiving said at least one optimization objective from an operator.

8. The method of claim 1, wherein said at least one optimization objective is one or more optimization objectives selected from a group consisting of minimizing execution time, minimizing code size, and minimizing runtime memory consumption.

5        9. The method of claim 1, wherein said selecting step comprises selecting the intermediate software optimization from said plurality of intermediate software optimizations having the highest evaluation.

10      10. A computer system for optimizing a computer program, said computer system comprising:

means for generating a plurality of intermediate software optimizations based on the computer program;

means for evaluating each of said plurality of intermediate software optimizations based on at least one optimization objective;

15      means for selecting a final software optimization from said plurality of intermediate software optimizations based on results of said evaluating step; and

means for transforming said final software optimization into an optimized computer program.

20      11. The computer system of claim 10, said generating means comprising at least:  
means for selecting an existing intermediate software optimization from said plurality of intermediate software optimizations;

means for identifying coding substitutions to apply to said existing intermediate software optimization;

means for selecting one of said identified coding substitutions; and

means for applying said selected one of said identified coding substitutions to a copy 5 of said selected existing intermediate software optimization to create a new intermediate software optimization.

12. A computer program product for optimizing a computer program, said computer program product comprising:

computer readable program code embodied in a computer readable medium, the computer readable program code comprising at least:

computer readable program code for generating a plurality of intermediate software optimizations based on the computer program;

computer readable program code for evaluating each of said plurality of intermediate software optimizations based on at least one optimization objective;

computer readable program code for selecting a final software optimization from said plurality of intermediate software optimizations based on results of said evaluating step; and

computer readable program code for transforming said final software 20 optimization into an optimized computer program.

13. The computer program product of claim 12, said generating computer readable program code comprising at least:

computer readable program code for selecting an existing intermediate software optimization from said plurality of intermediate software optimizations;

5 computer readable program code for identifying coding substitutions to apply to said existing intermediate software optimization;

computer readable program code for selecting one of said identified coding substitutions; and

computer readable program code for applying said selected one of said identified coding substitutions to a copy of said selected existing intermediate software optimization to create a new intermediate software optimization.

14. An operating system capable of optimizing a computer program, said operating system comprising:

15 program code for generating a plurality of intermediate software optimizations based on the computer program;

program code for evaluating each of said plurality of intermediate software optimizations based on at least one optimization objective;

20 program code for selecting a final software optimization from said plurality of intermediate software optimizations based on results of said evaluating step; and

program code for transforming said final software optimization into an optimized computer program.

15. The operating system of claim 14, said generating program code comprising at least:

program code for selecting an existing intermediate software optimization from said plurality of intermediate software optimizations;

5 program code for identifying coding substitutions to apply to said existing intermediate software optimization;

program code for selecting one of said identified coding substitutions; and

10 program code for applying said selected one of said identified coding substitutions to a copy of said selected existing intermediate software optimization to create a new intermediate software optimization.

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